



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,500	02/10/2004	Jathan D. Edwards	10415US01	2311

7590 08/10/2005

Attention: Eric D. Levinson  
Imation Corp.  
Legal Affairs  
P.O. Box 64898  
St. Paul, MN 55164-0898

EXAMINER

BOUTSIKARIS, LEONIDAS

ART UNIT PAPER NUMBER

2872

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/775,500	<b>Applicant(s)</b> EDWARDS, JATHAN D.	
	<b>Examiner</b> Leo Boutsikaris	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8 and 17 is/are rejected.
- 7) ☒ Claim(s) 2-7,9-16,18 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

Claims 1-19 are objected to because of the following informalities:

Claims 1-19 recite the phrase “input light source”. It is suggested that the above phrase is changed to “input light beam”, to avoid any confusion as to whether the “interior” and “perimeter” terms refer to the input light beam or to the actual physical structure of the light source.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 8, 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishiwaki (US 5,307,184).

Nishiwaki discloses an optical recording system, wherein an input light beam from a laser source 1 passes through a patterning mask 8b and a refracting prism 9 before it impinges on a recording material 11 (Fig. 3, lines 16-48, col. 4). In one embodiment, the mask is such that an interior portion of the input light beam passes through section 22 of the mask 8b, in addition to a

Art Unit: 2872

perimeter portion of the input light beam passing through section 23 of the mask 8b. Said two light beams are refracted through prism 9 and interfere to produce interference patterns 26 and 27. In other words, the former beam acts a data encoded object beam and the latter as a reference beam (Fig. 8c, lines 29-35, col. 7). It is noted that the broadest meaning of the term “spatial light modulator” is taken to include a patterning mask, which imposes (intensity) modulation on an incident light beam according to a predetermined pattern being formed on the mask, the pattern corresponding to data information.

***Allowable Subject Matter***

Claims 2-7, 10-16, 18 would be allowable if rewritten to overcome the objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 9, 19 would be allowable if rewritten or amended to overcome the objection, set forth in this Office action.

Claims 2-7, 9-16, 18-19 are allowable over the prior art of record for at least the reason that even though the prior art discloses holographic recording systems where the object and reference beams are along the same axis, and on the same side of the recording material, the prior art fails to teach or reasonably suggest, regarding claims 2-8, 18, a method comprising creating an object beam from the interior portion of an input light beam using a spatial light modulator, and a reference beam from a perimeter portion of the input beam, wherein the spatial light modulator includes a set of controllable optical elements, and regarding claims 9-16, 19, a spatial light modulator comprising a set of controllable optical elements to create an object beam

Art Unit: 2872

from an interior portion of the input beam and a reference beam from a perimeter portion of the input beam, as set forth by the claimed combination.

In Nishiwaki's system, the mask 8b is a passive element, lacking any controllable optical elements e.g., cells, as it is the case with conventional electrically or optically addressed SLMs, and there is no suggestion or motivation to replace the mask with an SLM in the above system.

Edwards (US 6,762,865, Fig. 3) discloses a holographic recording system wherein the object and reference beams are along the same direction on the same side of the recording material, by separating the Fourier components of the object beam *after* it passes through the SLM. Similarly, Edwards (US 6,538, 776, Fig. 4) creates the above arrangement for the object and reference beams by reflecting the zero frequency Fourier component of the object beam to create a reference beam.

King (US 2003/0039001, Fig. 6A) discloses a holographic recording system wherein a (separate) reference beam 618 is made to be reflected off an annular mirror 604 adjacent to the SLM 602, so that object and reference beam are coincident.

Lee (US 6,775,037, Fig. 4(a)), discloses an optical recording system, wherein the exterior portion of the input beam 402 is made to reflect off the outer portion of the SLM 404, in order to create *both* object and reference beams 420, 421. The interior portion of the input beam is not used for the recording. Similarly, Holmes (US 6,753,989, Fig. 2) discloses a method for recording a hologram 12, wherein the middle portion of the input beam 9 is blocked, and only an outer portion of the input beam passes through the SLM 1 to create *both* object and reference beams 10, 11.

Art Unit: 2872

Finally, Long (US 6,222,650, Fig. 1) discloses a system for recording holograms, wherein the  $\pm 1$  diffraction orders of light passing through the SLM 68, are used to create the object and reference beams.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D., J.D.  
Primary Patent Examiner, AU 2872  
August 7, 2005

  
**LEONIDAS BOUTSIKARIS**  
**PRIMARY EXAMINER**